

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-11. (Cancelled).

Claim 12. (Currently Amended) A transmission method in a base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the transmission method comprising the steps of:

spreading the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

spreading each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

summing up to combine each of the sets of the signals spread by using the orthogonal code and the spreading code the spread signals; and

transmitting the sets of the signals which are summed up to combine,

wherein ~~the spreading codes for use in spreading signals of respective channel groups~~
differ from each other,

~~the orthogonal codes for use in spreading signals of respective channels in each channel group~~ differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread by using ~~[[an]]~~ the orthogonal code and ~~[[a]]~~ the spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel, and~~

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 13. (Currently Amended) A transmission method in a base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the transmission method comprising the steps of:

spreading the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

spreading each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

summing up to combine each of the sets of the signals spread by using the orthogonal code and the spreading code ~~the spread signals~~; and

transmitting the sets of the signals which are summed up to combine,

wherein the spreading codes ~~for use in spreading signals of respective channel groups~~ differ from each other,

the orthogonal codes ~~for use in spreading signals of respective channels in each channel group~~ differ from each other,

channels of ~~[[the]]~~ each channel ~~[[groups]]~~ group include a pilot channel,

the pilot channel is spread by using ~~[[an]]~~ the orthogonal code and ~~[[a]]~~ the spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,~~

the step of transmitting transmits a signal of the pilot channel with a symbol rate higher than a minimum symbol rate defined in the CDMA mobile communication system, and

the signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 14. (Previously Presented) The transmission method as claimed in claim 13, wherein the symbol rate higher than the minimum symbol rate is determined in accordance with a relationship between transmission power of each channel and channel capacity.

Claim 15. (Currently Amended) A communication method for use in a CDMA mobile communication system comprising a base station for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, and a mobile station for receiving the signal, the communication method comprising the steps of:

spreading, in the base station, the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

spreading, in the base station, each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

summing up to combine, in the base station, each of the sets of the signals spread by using the orthogonal code and the spreading code ~~the spread signals~~;

transmitting, in the base station, the sets of the ~~[[spread]]~~ signals which are summed up to combine;

receiving, in the mobile station, signals including signals of the plurality of channels of the plurality of channel groups which are included in the set of the signals which are summed up to combine; and

measuring, in the mobile station, in each channel group, interference power of a channel other than a pilot channel by despreading the received signals by using a orthogonal code and a spreading code for use in spreading a signal of the pilot channel of the channel group,

wherein the spreading codes ~~for use in spreading signals of respective channel groups~~ differ from each other,

~~the orthogonal codes for use in spreading signals of respective channels in each channel group~~ differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread by using an orthogonal code and a spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,~~

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation, and

the step of transmitting transmits a signal of a pilot channel only in one of the channel groups, and does not transmit a signal of a pilot channel in another channel group.

Claim 16. (Currently Amended) A base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the base station comprising:

means for spreading the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

means for spreading each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

means for summing up to combine each of the sets of the signals spread by using the orthogonal code and the spreading code ~~the spread signals;~~ and

means for transmitting the sets of the ~~[[spread]]~~ signals which are summed up to combine,

wherein the spreading codes ~~for use in spreading signals of respective channel groups~~ differ from each other,

the orthogonal codes ~~for use in spreading signals of respective channels in each channel group~~ differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread by using ~~[[an]]~~ the orthogonal code and ~~[[a]]~~ the spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel, and~~

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 17. (Previously Presented) A CDMA mobile communication system comprising the base station as claimed in claim 16.

Claim 18. (Currently Amended) A base station for use in a CDMA mobile communication system for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, the base station comprising:

means for spreading the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that

sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

means for spreading each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

means for summing up to combine each of the sets of the signals spread by using the orthogonal code and the spreading code ~~the spread signals;~~ and

means for transmitting the sets of the ~~[[spread]]~~ signals which are summed up to combine,

wherein the spreading codes for use in spreading signals of respective channel groups differ from each other,

the orthogonal codes for use in spreading signals of respective channels in each channel group differ from each other,

channels of each ~~[[the]]~~ channel ~~[[groups]]~~ group include a pilot channel,

the pilot channel is spread by using ~~[[an]]~~ the orthogonal code and ~~[[a]]~~ the spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,~~

the means for transmitting transmits a signal of the pilot channel with a symbol rate higher than a minimum symbol rate defined in the CDMA mobile communication system, and

the signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 19. (Previously Presented) The base station as claimed in claim 18, wherein the symbol rate higher than the minimum symbol rate is determined in accordance with a relationship between transmission power of each channel and channel capacity.

Claim 20. (Previously Presented) A CDMA mobile communication system comprising the base station as claimed in claim 18.

Claim 21. (Currently Amended) A CDMA mobile communication system comprising a base station for transmitting a signal of each of a plurality of channels included in each of a plurality of channel groups, and a mobile station for receiving the signal, wherein the base station comprises:

means for spreading the signal of each of the plurality of channels included in each of the plurality of channel groups, by using an orthogonal code, and summing up to combine the signals spread by using the orthogonal code for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups;

means for spreading each of the sets of the signals spread by using the orthogonal code, by using a spreading code;

means for summing up to combine each of the sets of the signals spread by using the orthogonal code and the spreading code ~~the spread signals~~; and

means for transmitting the sets of the ~~[[spread]]~~ signals which are summed up to combine, and

the mobile station comprises:

means for receiving signals including signals of the plurality of channels of the plurality of channel groups which are included in the set of the signals which are summed up to combine; and

means for measuring, in each channel group, interference power of a channel other than a pilot channel by despread the received signals by using ~~[[a]]~~ an orthogonal code and a spreading code for use in spreading a signal of the pilot channel of the channel group,

wherein the spreading codes ~~for use in spreading signals of respective channel groups~~ differ from each other,

the orthogonal codes ~~for use in spreading signals of respective channels in each channel group~~ differ from each other,

channels of each channel group include a pilot channel,

the pilot channel is spread by using an orthogonal code and a spreading code,

~~the signals which are summed up to combine include the plurality of channel groups, each of the channel groups having the pilot channel,~~

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation, and

the means for transmitting transmits a signal of a pilot channel only in one of the channel groups, and does not transmit a signal of a pilot channel in another channel group.

Claim 22. (Currently Amended) A mobile station for use in a CDMA mobile communication system for receiving a signal of each of a plurality of channels included in each

of a plurality of channel groups, the signal of each of the plurality of channels included in each of the plurality of channel groups being spread by using an orthogonal code, and the signals spread by using the orthogonal code being summed up to combine for each of the plurality of channel groups, so that sets of the signals spread by using the orthogonal code are generated, each of the sets corresponding to each of the plurality of channel groups, each of the sets of the signals spread by using the orthogonal code being spread by using a spreading code, each of the sets of the signals spread by using the orthogonal code and the spreading code being summed up to combine, the spreading codes for use in spreading signals of respective channel groups differing from each other, the orthogonal codes for use in spreading signals of respective channels in each channel group differing from each other, channels of each channel group including a pilot channel, the pilot channel being spread by using an orthogonal code and a spreading code, the mobile station comprising:

means for receiving signals including signals of the plurality of channels of the plurality of channel groups which are included in the set of the signals which are summed up to combine; and

means for measuring, in each channel group, interference power of a channel other than a pilot channel by despreading the received signals by using an orthogonal code and a spreading code for use in spreading a signal of the pilot channel of the channel group,

~~wherein the received signals include the plurality of channel groups, each of the channel group having the pilot channel, and~~

a signal transmitted over the pilot channel undergoes data modulation by a known pattern or does not undergo any data modulation.

Claim 23. (Previously Presented) The mobile station as claimed in claim 22, wherein the means for measuring interference power measures the interference power by using a symbol period of the pilot channel.